

1

## BUMPER BEAM EXTENSIONS

### Field of Invention

8m  
12/1/03

This application is a division of U.S. Application Serial No. 09/743,546, filed July 27, 1999, <sup>now U.S. Patent No. 6,357,816</sup> entitled "Bumper Beam Extensions" for which priority is claimed, which is a 35 U.S.C. 371 application of PCT/US99/16947, filed July 27, 1999, which claims the benefit of provisional application No. 60/094,527, filed July 29, 1998, all of which are incorporated herewith by reference in their entireties.

### Background of the Invention

In many current production vehicles, the front bumper system comprises a bumper impact beam mounted to the frame of a vehicle and covered by a fascia mounted to the vehicle body. The bumper beam must extend outside the rails of the frame to protect the vehicle during 30° corner impact tests as mandated by the FMVSS (Federal Motor Vehicle Safety Standards). The bumper beam cannot be attached to the frame at the frame factory without greatly reducing the shipping density of the frame. Therefore, the bumper beam is typically shipped separately to the assembly plant and then attached to the frame. If the bumper beam could be attached at the frame factory, it could be welded to the frame, thus providing increasing stiffness and crash integrity.

Referring to Figure 4, some vehicles have incorporated a small blow molded end cap 50 attached to the end of the bumper beam 12 which supports the side of the fascia 18 as it extends around to the body. In the prior art, the end cap 50 does not perform any significant crush resistance. Energy absorbing foam 16 may be added to the bumper beam 12. Additional energy absorbing foam may be added forward of the end cap to support the fascia 18 during impact. However, such additions only take up space and do not provide any substantial crush resistance improvement. Thus, there is a need for a bumper beam extension that aids in providing crush resistance.

### Summary of the Invention

The disadvantages of the prior art may be overcome by providing a bumper beam having three parts: a center beam, a left side beam extension, and a right side beam extension. The center beam can be welded to the frame for increased stiffness and shipped with the frame from the frame factory at no additional shipping cost. The left and right side beam extensions provide 30° corner impact resistance.

According to one aspect of the invention, there is provided a bumper beam extension comprising a body having a first end configured to be inserted into an end of a bumper beam and an opposite end contoured to support a fascia. The body is shaped to provide structural rigidity.